Claims 24 and 37 are objected to due to typographical errors. The Examiner suggests that the phrase "... an oblique parallel projection the predetermined tile structure" in each of the claims be amended to "... an oblique parallel projection of the predetermined tile structure." Claims 24 and 37 have been amended as suggested by the Examiner.

Claims 1-33 stand rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way to show that the inventors had possession of the claimed invention at the time the application was filed. The Examiner notes that claim 1 recites the limitation "image texture rendered simultaneously on a display screen immediately adjacent each other" in texture mapping. The Examiner states that there is insufficient disclosure in the specification leading to the claimed limitation, as well as to analogous limitations in independent claims 16 and 27. Applicants respond as follows.

Fig. 4 was included in the application as filed and is a front view illustration of a display screen having rendered thereon an exemplary two-dimensional array of view-dependent sprited tiles having respective textures that are of a simplified structure in the form of a solid block casting a shadow. (Application page 4, lines 1-4.) In particular, Fig. 4 shows display screen 402 having rendered thereon an image surface 403 with an exemplary two-dimensional array of view-dependent sprited tiles 404AA-404DF having respective textures 406AA-406DF that are of a simplified structure in the form of a solid block 408 (only one numbered) casting a shadow 410 (only one numbered). (Application page 8, lines 18-23.) The sprited tiles 404AA-404DF provide different views of block 408 in respective textures 406AA-406DF. The different views of block 408 correspond to different horizontal viewing angles 412 and vertical viewing angles 414 at which the user can see tiles 404. (Application page 9, lines 4-7.)

Claim 1 recites "plural respective views of the image texture rendered simultaneously on a display screen immediately adjacent each other." Applicants submit that Fig. 4 and the associated description clearly disclose the cited

subject matter of claim 1, as well as of claims 16 and 27. In particular, Fig. 4 shows plural "view-dependent sprited tiles 404AA-404DF" that are rendered together (i.e., simultaneously) on display screen 402. The "sprited tiles 404AA-404DF provide different views of block 408 in respective textures 406AA-406DF." Applicants submit, therefore, that the subject matter of claims 1, 16, and 27 was described in the specification in such a way to show that the inventors had possession of the claimed invention at the time the application was filed. Applicants request, therefore, that this rejection be withdrawn.

Claims 34-36 and 38-39 are rejected under 35 U.S.C. 103(a) for obviousness over Sakaibara et al. (US Patent No. 5,786,822). Applicants respond as follows.
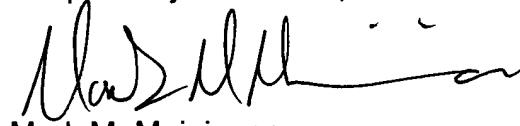
Claim 34 has been amended to recite simultaneously rendering the texture map tiles corresponding to the viewing angles at the adjacent regions on the computer display screen to form the texture map on the image surface. As indicated above, this subject matter is supported in the application by Fig. 4 and the corresponding description in the specification. Applicants submit that Sakaibara et al. provides no teaching or suggestion of simultaneously rendering the texture map tiles corresponding to the viewing angles at the adjacent regions on the computer display screen. Rather, Sakaibara et al. is directed to rendering different views of an object at different times and positions, as illustrated at Fig. 13. Applicants believe, therefore, that claim 34 and its dependent claims 35, 38, and 39 are in condition for allowance and respectfully request the same.

Claim 37 is objected to as being dependent on a rejected base claim, but would be allowable if rewritten in independent form. Claim 37 has been rewritten in independent form to include the subject matter of claim 34, as well as the amendment to correct a typographical error. Applicants request, therefore, that claim 37 be allowed.

Applicants believe the application is in condition for allowance and respectfully request the same.

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Respectfully Submitted,

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Attachment
Claims 1-39
Application Number: 09/195,728

1. A computer-readable medium having stored thereon a tile data structure for a tile representing an image texture for tiled texture mapping, comprising:

plural tile data structures representing plural respective views of the image texture rendered simultaneously on a display screen immediately adjacent each other.

2. The medium of claim 1 in which the plural respective views of the image texture are based upon oblique-parallel projections of the image texture.

3. The medium of claim 1 in which the plural respective views correspond to a range of user viewing angles that are rendered simultaneously on the display screen, each tile data structure corresponding to a segment in the range of user viewing angles.

4. The medium of claim 3 in which the segments in the range of user viewing angles are not equal.

5. The medium of claim 4 in which viewing angles are with respect to a predetermined reference and the segments closest to the predetermined reference are smaller that the segments farthest from the predetermined reference orientation.

6. The medium of claim 3 in which the segments in the range of user viewing angles are equal.

7. The medium of claim 3 in which the range of viewing angles extends over viewing angles of positive and negative magnitudes relative to a viewpoint position.

8. The medium of claim 7 in which the segments of viewing angles of positive magnitudes to which tile data structures correspond are matched one-to-one with the segments of viewing angles of negative magnitudes to which tile data structures correspond.

9. The medium of claim 1 in which the plural respective views are within only one angular dimension.

10. The medium of claim 9 in which the one angular dimension is a horizontal angular dimension corresponding to angles within a horizontal imaging plane.

11. The medium of claim 1 in which the plural respective views are within only two angular dimensions.

12. The medium of claim 11 in which the two angular dimensions are a horizontal angular dimension corresponding to angles within a horizontal imaging plane and a vertical angular dimension corresponding to angles within a vertical imaging plane.

13. (Previously Amended) The medium of claim 1 in which the image texture includes an outer surface and the outer surface is of the same dimensions in each of the plural respective views of the image texture.

14. The medium of claim 1 in which the plural respective views of the image texture are based upon morphings of the image texture.

15. The medium of claim 1 in which the plural respective views of the image texture are based upon manually formed renderings of the image texture.

16. A computer method of applying a texture map to an image surface in a graphics image rendered on a computer display screen, comprising:

identifying plural adjacent regions of the image surface to which regions the texture map is to be applied;

determining a user viewing angle for each of the plural regions;

correlating each viewing angle with a texture map tile corresponding to the viewing angle; and

rendering the texture map tiles simultaneously at the adjacent regions on the computer display screen to form the texture map on the image surface.

17. The computer method of claim 16 in which the texture map tile corresponding to the viewing angle for each region is one of plural predetermined texture map tiles stored in a computer memory.

18. The computer method of claim 16 in which the texture map tile corresponding to the viewing angle for each region is calculated based upon the determining of the viewing angle.

19. The computer method of claim 16 in which determining a viewing angle for each region includes determining only one viewing angle for the region corresponding to angles within only one imaging plane.

20. The computer method of claim 19 in which the one viewing angle is a horizontal viewing angle corresponding to an angle within only a horizontal imaging plane.

21. The computer method of claim 16 in which determining a viewing angle for each region includes determining two viewing angles corresponding to angles within two transverse imaging planes.

22. The computer method of claim 21 in which the two viewing angles are a horizontal viewing angle and a vertical viewing angle corresponding to angle within horizontal and vertical imaging planes, respectively.

23. The computer method of claim 16 in which determining a viewing angle for each region includes determining only one viewing angle for the region corresponding to angles within only one imaging plane.

24. (Amended) The computer method of claim 16 in which the texture map tile corresponding to the viewing angle is of a predetermined tile structure and includes an oblique parallel projection of the predetermined tile structure.

25. The computer method of claim 16 in which the texture map tile corresponding to the viewing angle is of a predetermined tile structure and includes a morphing of the predetermined tile structure.

26. The computer method of claim 16 in which in which the texture map tile corresponding to the viewing angle is of a predetermined tile structure and includes a manually formed renderings of the predetermined tile structure.

27. A method of generating a tile data structure in a computer readable medium representing an image texture for a tiled texture mapping, comprising:

determining plural selected viewing angles for viewing simultaneously plural adjacent tiles of the image texture;

correlating each of the plural selected viewing angles to a predetermined range of viewing angles that includes the selected viewing angle, immediately successive predetermined viewing angle ranges being correlated to adjacent tiles of the image texture; and

forming for each of the selected viewing angles a data structure that includes plural projections of the image texture relative to the selected viewing angles of plural adjacent tiles to be viewed simultaneously.

28. The method of claim 27 in which the image texture includes a front surface with predetermined dimensions and the projections of the image texture relative to the selected viewing angles maintains the predetermined dimensions of the front surface of the image texture.

29. The method of claim 27 in which the projections of the image texture relative to the selected viewing angles are oblique parallel projections.

30. The method of claim 27 in which the plural selected viewing angles are within only one angular dimension.

31. The method of claim 27 in which the plural selected viewing angles are within only two angular dimensions.

32. The medium of claim 27 in which the plural respective views of the image texture are based upon morphings of the image texture.

33. The medium of claim 27 in which the plural respective views of the image texture are based upon manually formed renderings of the image texture.

34. (Amended) In a computer readable medium, computer software instructions for applying a texture map to an image surface in a graphics image rendered on a computer display screen, comprising:

software instructions for identifying plural adjacent regions of the image surface to which regions the texture map is to be applied;

software instructions for determining a viewing angle for each of the plural regions;

software instructions for correlating each viewing angle with a texture map tile corresponding to the viewing angle; and

software instructions for <u>simultaneously</u> rendering the texture map tiles <u>corresponding to the viewing angles</u> at the adjacent regions on the computer display screen to form the texture map on the image surface.

35. The medium of claim 34 in which the texture map tile corresponding to the viewing angle for each region is one of plural predetermined texture map tiles stored in a computer memory.

36. The medium of claim 34 in which the texture map tile corresponding to the viewing angle for each region is calculated based upon the determining of the viewing angle.

37. (Amended) [The medium of claim 34 in which the texture map tile corresponding to the viewing angle] <u>In a computer readable medium, computer software instructions for applying a texture map to an image surface in a graphics image rendered on a computer display screen, comprising:</u>

<u>software instructions for identifying plural adjacent regions of the image surface to which regions the texture map is to be applied;</u>

<u>software instructions for determining a viewing angle for each of the plural regions;</u>

<u>software instructions for correlating each viewing angle with a texture map tile corresponding to the viewing angle</u> for each region is of a predetermined tile

structure and includes an oblique parallel projection of the predetermined tile structure; and

software instructions for rendering the texture map tiles at the adjacent regions on the computer display screen to form the texture map on the image surface.

38. The medium of claim 34 in which the texture map tile corresponding to the viewing angle for each region is of a predetermined tile structure and includes a morphing of the predetermined tile structure.

39. The medium of claim 34 in which in which the texture map tile corresponding to the viewing angle for each region is of a predetermined tile structure and includes a manually formed rendering of the predetermined tile structure.